Trend Study 21B-17-03

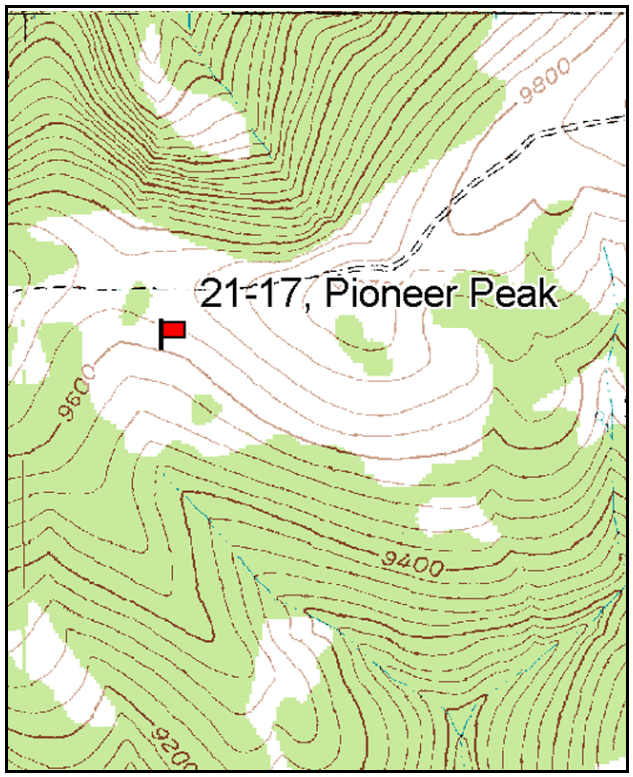
Study site name: Pioneer Peak . Vegetation type: Perennial grass/forb .

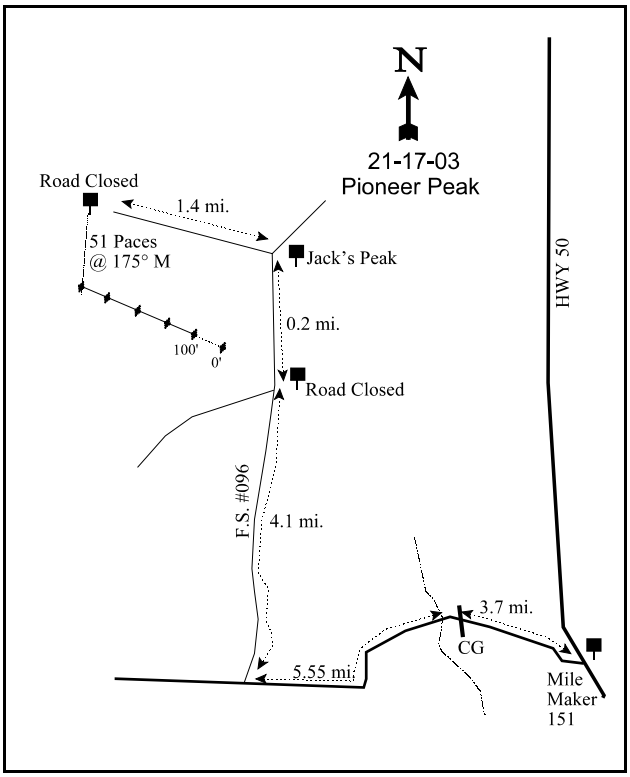
Compass bearing: frequency baseline 281 degrees magnetic.

Frequency belt placement: line 1 (11ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95ft). No rebar.

LOCATION DESCRIPTION

From Highway 50 at mile marker 151, drive west 3.7 miles to a cattlegaurd. Go another 0.75 miles across a stream to a gate. Go through the gate and drive 5.55 miles past the weather gauging station to a right turn. Turn right onto road # 096 and go 4.1 miles to a "road closed" sign on the left, just before Jack's Peak. Drive 0.2 miles to Jack's Peak. From here, turn left and drive 1.4 miles to the end of the road and a "road closed" sign. From this sign, walk 51 paces at 175° M to the 500-foot stake. The 0-foot stake is 500 feet away at 101° M next to a big fir tree.





Map name: Mt. Catherine

Diagrammatic Sketch

Township 21S , Range 3W , Section 11

GPS: NAD 27, UTM 12S 4316480 N, 399264 E

DISCUSSION

Pioneer Peak - Trend Study No. 21-17

This study is located on the east side of the Pahvant Plateau near Pioneer Peak. The trend study was established in 1997 to address conflicts between elk and livestock grazing in this area. The transect samples a dry meadow type bordered on two sides by aspen at an elevation of 9,600 feet. It is located on a saddle that was contour furrowed and seeded in the past. Aspect is south-southeast with a slope of 20% to 25%. Cattle and elk use the area during the summer. A pellet group transect estimated 1 deer, 22 elk, and 33 cattle days use/acre (3 ddu/ha, 54 edu/ha, and 82 cdu/ha) in 1997. Cattle were present on the site in 1997 during study establishment and had utilized much of the grasses on the site, especially orchard grass. Cattle were also present in the area during the 2003 survey. In 2003, Elk use was estimated at 2 days use/acre (5 edu/ha) and cattle use at 19 days use/acre (47 cdu/ha). Most of the use on the site occurs on the seeded contoured furrows. A cattle pond is located about 200 yards down slope from the study site.

Soil on the site is deep with an estimated effective rooting depth of nearly 24 inches. Textural analysis indicates soils to be a clay loam with a moderately acidic pH (6.0). There are some large boulders on the surface and in the profile, but the soil is mostly rock free. Vegetation cover is abundant and consists almost entirely of grasses and forbs. Litter cover is fair. Although bare ground cover is common at 31% and 46% in 1997 and 2003 respectively, erosion is low due to the abundance of herbaceous vegetation and the contoured furrows. There is a lot of rodent burrowing throughout the site.

The plant composition is made up of almost entirely of grasses and forbs. No browse species were sampled in the density strips in either reading, although a few mountain snowberry and skunkbush sumac were measured for height and crown in 2003. Mature aspen clones border the site and mature trees appear high-lined. There are no young trees along the clone borders.

The herbaceous understory is abundant and diverse. Eight perennial grasses combined to produce nearly 20% average cover in 1997. An additional species, Kentucky bluegrass, was sampled in 2003. Species that appear to have been seeded onto the site include intermediate wheatgrass, mountain brome, smooth brome, and orchard grass. These species dominate the herbaceous understory and accounted for 84% of the grass cover in 1997 and 66% in 2003. Native grasses include slender wheatgrass, onion grass, subalpine needlegrass, and Letterman needlegrass. The significant increase in subalpine needlegrass and corresponding significant decrease in Letterman needlegrass between years is partly due to identification problems. The needlegrasses were present in intermediate forms that were difficult to distinguish between. The seeded grasses occur mainly in the furrows and were moderately utilized in 2003. Conversely, native grasses occur mostly in between furrows and receive minimal use.

Twenty-five species of forbs have been sampled on this site. They produced about 19% average cover in both 1997 and 2003. There are some useful species along with several increasers and undesirable species. The undesirable species include tarweed which is present in scattered clumps but is not widespread. The presence of tarweed along with larkspur, sticky geranium, slenderleaf collomia, hoary aster, dandelion, and sandwort indicate continued disturbance and past site degradation. Initially this area was most likely a tall forb community that, after being historically overgrazed by livestock, lost some of its site potential due to soil loss.

1997 APPARENT TREND ASSESSMENT

The soil trend appears stable even though percent bare ground is relatively high at 30%. Contour furrows, along with the abundant herbaceous vegetation cover, effectively limit erosion. However, litter cover is relatively low for a high elevation site like this one. Browse species are insignificant on the site but aspen

clones nearby appear to have been impacted by grazing. Mature trees are highlined and no reproduction is evident. The herbaceous understory is abundant with about one-half of the cover coming from grasses and the other half coming from forbs. However, forb composition is poor due to the abundance of less desirable species such as tarweed and larkspur. The site potential has obviously been reduced in the past due to overgrazing and soil erosion. It is not currently known what this site can support, but future trends for the herbaceous understory will depend on changes in nested frequency of larkspur, tarweed, and some of the other increasers.

2003 TREND ASSESSMENT

Trend for soil is slightly down. Erosion remains low, but bare soil increased to 46% and litter cover declined. There is no browse trend on this site as browse is insignificant on the site and of little importance on this high elevation summer range. Trend for the herbaceous understory is slightly down. Perennial grasses declined in sum of nested frequency overall. The only increase of significance comes from the combination of subalpine needlegrass and Letterman needlegrass which have only fair forage value. Orchard grass, intermediate wheatgrass, and mountain brome all significantly declined in nested frequency in 2003. Weeds and increasers still dominate the forb component and the number of desirable forb species are outnumbered by more than two to one. Annual forbs significantly decreased in nested frequency in 2003, with perennials remaining fairly stable. Neither tarweed or larkspur increased in 2003 which is a positive sign. Pacific aster did significantly increase however.

TREND ASSESSMENT
soil - slightly down (2)
browse - no trend (n/a)
herbaceous understory - slightly down (2)

HERBACEOUS TRENDS --
Management unit 21 , Study no: 17

Type	Species	Nested Frequency '97	Nested Frequency '03	Average Cover % '97	Average Cover % '03
G	Agropyron intermedium	$_{b}$201	$_{a}$169	8.41	6.84
G	Agropyron trachycaulum	$_{a}$7	$_{b}$35	.04	1.02
G	Bromus carinatus	$_{b}$173	$_{a}$135	5.08	2.86
G	Bromus inermis	63	39	2.18	1.75
G	Dactylis glomerata	$_{b}$72	$_{a}$5	.87	.01
G	Melica bulbosa	2	3	.01	.03
G	Poa pratensis	-	6	-	.03
G	Stipa columbiana	$_{a}$1	$_{b}$104	.00	4.00
G	Stipa lettermani	$_{b}$125	$_{a}$66	3.05	.78
Total for Annual Grasses		0	0	0	0
Total for Perennial Grasses		644	562	19.66	17.34
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F	Achillea millefolium	$_{a}$1	$_{b}$13	.03	.10
F	Agoseris glauca	$_{b}$23	$_{a}$3	.18	.04

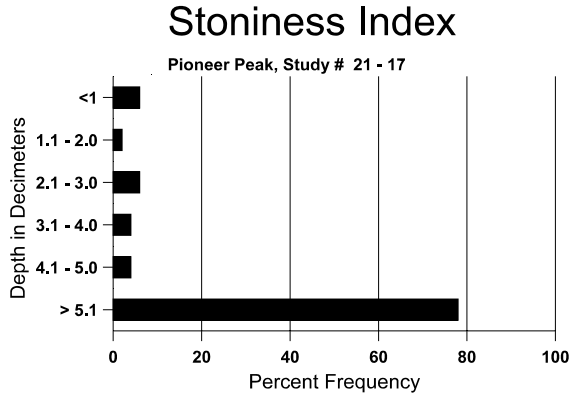
Type	Species	Nested Frequency		Average Cover %	
		'97	'03	'97	'03
F	Arabis spp.	16	24	.08	.12
F	Artemisia dracunculus	2	2	.03	.68
F	Aster chilensis	$_{a}$6	$_{b}$102	.01	1.54
F	Collomia linearis (a)	$_{b}$225	$_{a}$84	2.25	.26
F	Delphinium occidentale	30	20	3.72	3.48
F	Epilobium paniculatum (a)	$_{b}$25	$_{a}$-	.16	-
F	Erigeron eatonii	4	1	.00	.03
F	Geranium spp.	5	5	.39	.47
F	Lupinus argenteus	47	49	1.99	3.11
F	Machaeranthera canescens	$_{b}$150	$_{a}$107	2.51	2.13
F	Madia glomerata (a)	79	72	2.21	1.25
F	Mertensia spp.	18	10	.38	.27
F	Orthocarpus tolmiei (a)	5	3	.18	.03
F	Penstemon spp.	-	4	-	.01
F	Polygonum douglasii (a)	$_{b}$184	$_{a}$108	1.00	1.25
F	Ranunculus spp.	13	-	.19	-
F	Senecio spp.	-	4	-	.06
F	Stellaria jamesiana	$_{b}$121	$_{a}$38	1.03	.15
F	Taraxacum officinale	12	19	.08	.26
F	Tragopogon dubius	2	6	.03	.09
F	Vicia americana	50	46	.61	.74
F	Viguiera multiflora	121	117	1.40	3.44
F	Viola spp.	8	-	.09	-
Total for Annual Forbs		518	267	5.83	2.80
Total for Perennial Forbs		629	570	12.78	16.78
Total for Forbs		1147	837	18.61	19.58

BASIC COVER --
Management unit 21 , Study no: 17

Cover Type	Average Cover %	
	'97	'03
Vegetation	50.48	35.20
Rock	3.24	3.06
Pavement	.43	.27
Litter	29.64	23.47
Cryptogams	1.00	0
Bare Ground	29.97	45.79

SOIL ANALYSIS DATA --
Management unit 21, Study no: 17, Study Name: Pioneer Peak

Effective rooting depth (in)	Temp °F (depth)	PH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
23.9	47.6 (17.7)	6.0	42.7	26.7	30.6	3.3	18.4	188.8	0.2



PELLET GROUP DATA --
Management unit 21 , Study no: 17

Type	Quadrat Frequency '97	Quadrat Frequency '03	Days use per acre (ha) '97	Days use per acre (ha) '03
Elk	5	1	22 (54)	2 (5)
Deer	-	-	1 (2)	-
Cattle	9	6	33 (82)	19 (47)

BROWSE CHARACTERISTICS --
Management unit 21 , Study no: 17

		Age class distribution (plants per acre)					Utilization				
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% poor vigor	Average Height Crown (in)
Rhus trilobata											
97	**0**	-	-	-	-	-	0	0	-	0	6/9
03	**0**	-	-	-	-	-	0	0	-	0	-/-
Symphoricarpos oreophilus											
97	**0**	-	-	-	-	-	0	0	-	0	-/-
03	**0**	-	-	-	-	-	0	0	-	0	19/49